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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/029,659	10/22/2001	Otto J. Prohaska	03141-P0380A WWW/DC	4969
24126	7590	04/22/2004		
ST. ONGE STEWARD JOHNSTON & REENS, LLC 986 BEDFORD STREET STAMFORD, CT 06905-5619			EXAMINER OLSEN, KAJ K	
			ART UNIT	PAPER NUMBER

1753

DATE MAILED: 04/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/029,659

Applicant(s)

PROHASKA ET AL.

Examiner

Kaj Olsen

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Electrochemical sensor with dry ionomer membrane and method for making the same.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The claims repeatedly refer to the use of a "dry ionomer membrane". The examiner is confused as to what the scope of this term is. At various times, applicant defines such a membrane as being a membrane that has not been soaked in any solution (last sentence of paragraph 0009 and paragraph 0020). However, earlier in paragraph 0009, applicant states that a dry ionomer membrane is simply a membrane that is hygroscopic (see first sentence of paragraph 0009). In addition, applicant states in paragraph 0026 that the invention may be manufactured using a wet or dry Nafion film seemingly contradicting the applicant's requirement that the membrane not be a soaked membrane. One reading the claimed invention would be unclear what the scope of "dry ionomer membrane" is.

Art Unit: 1753

5. This is further confused for claims 1-7, 17 and 18, which are drawn to an apparatus where the membrane can be wetted (see claims 3, 5 and 6). It would appear the "dry ionomer membrane" of claim 1 is merely referring to the state of the membrane during manufacture and the apparatus is not limited to non-wet membranes. Patentability of a product is based on the final product and not on the method for which the product was made (see *In re Thorpe*, 777 F.2d 695, 698).

6. Claims 2 and 9 contain the trademark/trade name Nafion. Where a trademark or trade name is used in a claim as a limitation to identify or describe a particular material or product, the claim does not comply with the requirements of 35 U.S.C. 112, second paragraph. See *Ex parte Simpson*, 218 USPQ 1020 (Bd. App. 1982). The claim scope is uncertain since the trademark or trade name cannot be used properly to identify any particular material or product. A trademark or trade name is used to identify a source of goods, and not the goods themselves. Thus, a trademark or trade name does not identify or describe the goods associated with the trademark or trade name. In the present case, the trademark/trade name is used to identify/describe tetrafluoroethylene-sulphonyl-fluoridevinyl ether copolymer and, accordingly, the identification/description is indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 1753

8. Claims 1-3, 5-10, 12-14, and 17-19 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over EP 1 037 041 A2.

9. EP '041 discloses a sensor cell for detecting gas comprising a substrate material (1, 11, 21), a sensing electrode (3, 13, 23) in contact with the substrate material (fig. 4), an ionomer membrane (5, 15, 25) that is in contact with the substrate and the gas. See fig. 1, 2, and 4 and paragraphs 0031 through 0033. With respect to the ionomer member being "dry", EP '041 never specifies anything about hydrating the membrane and further discloses utilizing the membrane at temperatures that exceed the boiling temperature of water (paragraph 0032). Hence, the membrane of EP '041 would read on "dry" giving the claim language its broadest reasonable interpretation. In addition, EP '041 discloses a step of drying the membrane (p. 5, line 5). Hence, even if the membrane of EP '041 were eventually hydrated, it is dry at this particular stage of sensor operation. Finally, with respect to the apparatus claims, the use of dry membrane appears to only be the part of the manufacturing on the sensor the determination of patentability for the claim is based on the product itself. Because the product of the claim is identical to the invention of EP '041 the process from which it was made is the same as or obvious over the process utilized by EP '041 (see *In re Thorpe*, 777 F.2d 695, 698).

10. EP '041 further discloses a counter electrode (4, 14, 24) and a reference electrode 28. See paragraph 0048 as an example. With respect to the limitations about wetting the membrane, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

11. With respect to a hole in the ionomer membrane, a membrane is inherently porous and those pores would read on the claimed "hole" giving the claim language its broadest reasonable

Art Unit: 1753

interpretation. Furthermore, any number of holes in the membrane would presumably aligned with the electrodes.

12. With respect to the method of making the electrochemical sensor (those limitations not covered above), figure 4 shows an opening 22 through the substrate. In addition, because EP '041 discloses applying Nafion followed by the step of drying, that would read on the step of "providing a dry ionomer membrane free from liquid droplets" giving the claim language its broadest reasonable interpretation. Alternatively, EP '041 also specifies that the membrane may be bound to the substrate via use of hot pressing. Because EP '041 never set forth that the membrane must be hydrated before any bonding process (if ever), one possessing ordinary skill in the art would have been motivated to provide the membrane in either the wet or dry state.

13. With respect to the wetting the dry ionomer membrane, it doesn't appear that applicant is ever positively reciting a step of wetting a membrane.

Claim Rejections - 35 USC § 103

14. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

15. Claims 4, 11, 15, and 16 (and 1-3, 5-10, 12-14, and 17-19 in the alternative) are rejected in the alternative under 35 U.S.C. 103(a) as being unpatentable over EP '041 in view of either LaConti et al (USP 4,820,386) or Shen et al (USP 5,650,054).

16. Claims 1-3, 5-10, 12-14, and 17-19 in the alternative are rejected in the alternative under 35 U.S.C. 103(a) as being unpatentable over EP '041 in view of Fray et al (USP 4,879,005).

Art Unit: 1753

17. With respect to claims 1-3, 5-10, 12-14, 17-19, EP '041 set forth all the limitations of the claims (see above). However, as pointed out above in the 112 rejections, applicant utilizes a number of different definitions of dry ionomer membranes including membranes that are hygroscopic irrespective of their wetness state. LaConti teaches the particular use of Nafion 117, which the instant invention evidences is inherently hygroscopic. See LaConti, col. 4, lines 27-31 and instant invention paragraph 0009. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of LaConti for the sensor (or method of making the sensor) of EP '041 because Nafion 117 was already an art recognized membrane and the use of known membrane forms in alternate sensors requires only routine skill in the art.

18. In addition, as set forth above, EP '041 teaches the use of a membrane (p. 5, lines 4-6), but is silent as to whether that membrane is wet or dry during the hot press stage (the drying of EP '041 is disclosed for the embodiment where the membrane is delivered as a solution). Both Fray and Shen teach that a membrane can be dried prior to any sensor assembly. In Fray, see col. 2, lines 39-46; in Shen, see col. 15, lines 21-25 and col. 16, lines 23-26. Air drying and desiccation would read on "dry" giving the claim language its broadest reasonable interpretation. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of either Fray or Shen for the sensor (or method of making the sensor) of EP '041 the prior art has recognized the desirability of working with a membrane in its dry state over a wet state.

19. With respect to claims 4 and 11, LaConti teaches the use of a polymer layer 38 over the sensing electrode in order to prevent water interference which improves reproducibility (col. 3,

Art Unit: 1753

lines 62-65 and col. 6, lines 59-68). Shen also teaches the use of a hydrophobic filter 212 over the electrode to control against dust and water (col. 11, lines 25-30). A polymer is a conventional material for a hydrophobic filter. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of LaConti or Shen for the sensor (or method for making the sensor) of EP '041 in order to improve the sensor reproducibility and repel water and dust. With respect to claims 15 and 16, both LaConti and Shen teach the use of reservoir in order to ensure the membrane is hydrated, which improves the response of the membrane. See Shen, col. 7, line 62 through col. 8, line 7; and LaConti, paragraph bridging col. 10 and 11.

Response to Arguments

20. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 6:30 A.M. to 4:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Kaj Olsen', with a long, wavy horizontal line extending to the right.

Kaj Olsen Ph.D.
Primary Examiner
AU 1753
April 14, 2004